

App. No. 09/848,625
Amendment Dated September 17, 2003
Reply to Office Action of June 17, 2003

Listing of claims:

1. (Currently amended) An apparatus for protecting a circuit from a transient event, comprising:

a signal transfer circuit comprising a transistor having a first non-control terminal that is arranged to receive a supply signal, a control terminal that is coupled to ground, and a second non-control terminal that is arranged to output a first signal during normal operation to a pin of the circuit and to a charge storage circuit, wherein the circuit is powered by the first signal during normal operation,

the charge storage circuit arranged to receive the first signal during normal operation and output a second signal to provide power during the transient event to the pin of the circuit, the charge storage circuit storing enough charge to provide the second signal during the transient event, wherein the circuit is powered by the second signal during the transient event.

2. (Original) The apparatus of Claim 1, wherein the charge storage circuit charges during normal operation, and discharges during the transient event.

3. (Cancelled)

4. (Cancelled)

5. (Original) The apparatus of Claim 1, wherein the charge storage circuit comprises a capacitor circuit, the capacitor circuit storing enough charge to provide the second signal during the transient event.

6. (Original) The apparatus of Claim 5, wherein the charge storage circuit is arranged to receive the first signal during normal operation and charge to the first signal during normal operation.

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7. (Currently amended) The apparatus of Claim 3, wherein the transistor circuit, further comprises a ~~first transistor~~ and a second transistor arranged to prevent drain from the charge storage circuit through a body diode of the transistor.

8. (Currently amended) An apparatus for protecting a circuit from a transient event, comprising:

a signal transfer circuit arranged to receive a supply signal and output a first signal that determines the logic state of an input pin of powers the circuit during normal operation;

a charge storage circuit arranged to receive a bias signal and the first signal, the charge storage circuit providing a second signal that determines the logic state of the input pin of powers the circuit during the transient event; and

an inverting circuit arranged to receive the first signal, the second signal, and the bias signal, the inverting circuit coupled to the input a-pin of the circuit, the inverting circuit arranged to hold the input pin of the circuit high during a startup of the circuit, and low during the transient event and during normal operation.

9. (Original) The apparatus of Claim 8, wherein the inverting circuit is a Schmidt trigger.

10. (Original) The apparatus of Claim 8, wherein the charge storage circuit is a capacitor circuit.

11. (Previously presented) The apparatus of Claim 8, wherein the signal transfer circuit is a diode circuit.

12. (Previously presented) The apparatus of Claim 8, wherein the signal transfer circuit is a transistor circuit.

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13. (Original) The apparatus of Claim 12, wherein the transistor circuit, further comprises a first transistor and a second transistor arranged to prevent drain from the charge storage circuit.

14. (cancelled).

15. (cancelled)

16. (cancelled)

17. (cancelled)

18. (cancelled)

19. (Previously presented) The apparatus of Claim 1, wherein the signal transfer circuit is further configured to prevent the stored charge of the charge storage circuit from falling below a level required to power the pin of the circuit.

20. (Previously presented) The apparatus of Claim 19, wherein the signal transfer circuit further comprises a transistor circuit having a body connection coupled to the pin of the circuit.

21. (cancelled)

22. (cancelled)

23. (cancelled)

24. (cancelled)

25. (cancelled)

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26. (cancelled)

27. (Currently amended) An apparatus for protecting a circuit from a transient event, comprising:

a signal transfer circuit arranged to receive a supply signal and output a first signal during normal operation;

a charge storage circuit arranged to receive a bias signal and the first signal, the charge storage circuit providing a second signal that provides determines the logic state of an input pin of the circuit power during the transient event; and

an inverting circuit arranged to receive the first signal, the second signal, and the bias signal, the inverting circuit coupled to a pin of the circuit, the inverting circuit arranged to hold the pin of the circuit high during a startup of the circuit, and low during the transient event and during normal operation, wherein the inverting circuit is a Schmidt trigger.

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28. (Previously presented) The apparatus of Claim 27, wherein the charge storage circuit is a capacitor circuit.

29. (Previously presented) The apparatus of Claim 27, wherein the signal transfer circuit is a diode circuit.

30. (Previously presented) The apparatus of Claim 27, wherein the signal transfer circuit is a transistor circuit.

31. (Previously presented) The apparatus of Claim 30, wherein the transistor circuit, further comprises a first transistor and a second transistor arranged to prevent drain from the charge storage circuit.

32. (New) A method for protecting a circuit from a transient event, comprising:

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receiving a supply signal and generating in response a first signal that determines the logic state of an input pin of the circuit during normal operation;

charging a charge storage circuit in response to the generated first signal and providing a second signal that determines the logic state of the input pin of the circuit during the transient event; and

generating an output signal for driving the logic state of the input pin in response to the first signal, the second signal, and the bias signal, such that the input pin of the circuit is held high during a startup of the circuit, and held low during the transient event and during normal operation.

33. (New) An apparatus for protecting a circuit from a transient event, comprising:
means for receiving a supply signal and generating in response a first signal that determines the logic state of an input pin of the circuit during normal operation;

means for storing a charge in response to the generated first signal and providing a second signal that determines the logic state of the input pin of the circuit during the transient event; and

generating an output signal for driving the logic state of the input pin in response to the first signal, the second signal, and the bias signal, such that the input pin of the circuit is held high during a startup of the circuit, and held low during the transient event and during normal operation.